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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/445,892      | 04/24/2000  | SHIGETOSHI SEGAWA    | MAT-7855US          | 1490             |

7590 09/16/2002

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EXAMINER

MAYES, MELVIN C

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

1734

DATE MAILED: 09/16/2002

14

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/445,892

Applicant(s)

SEGAWA ET AL.

Examiner

Melvin Curtis Mayes

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1734

-- **Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3-5,7-11 and 14-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-5,7-11 and 14-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

(1)

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 10, 2002 has been entered.

### ***Claim Rejections - 35 USC § 103***

(2)

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

(3)

Claims 1, 3, 7, 9 and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 0 535 711 in view of JP 6-125171 and Dudding.

EP 0 535 711 discloses a method of making a multilayered ceramic substrate comprising: forming green sheets of low-temperature firing substrate material; laminating green sheets; laminating, on both sides of the laminate, green sheets of inorganic material such as alumina which is not sintered at the sintering temperature of the green sheets; sintering the laminate; and removing the unsintered alumina inorganic material layers by a conventional method such as sand blast (pg. 4, lines 30-57). EP '711 does not disclose removing the unsintered inorganic material layers by spraying (blasting) alumina powder, water and compressed air.

JP 6-125171 teaches that sand blasting is the method of grinding the face of a ceramic substrate by spraying particles such as alumina on the substrate (computer translation, pg. 2, paragraph [0016]).

Dudding teaches that dry abrasive blasting techniques such as sand blasting have the disadvantage of producing a wide dispersion of the debris from the surface and of the dust formed by the abrasive particles after impact on the surface while blasting surfaces with high pressure water or air jets requires apparatus capable of generating pressures of some thousands of pounds per square inch. Dudding teaches that the conventional dry blasting technique can be modified to avoid the disadvantage of dispersion and also to improve the efficiency of that technique in the amount of abrasive that needs to be utilized by providing an apparatus in which damping liquid (water) is entrained in a compressed air stream employed to carry the abrasive so

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as to distribute the water in the compressed air stream, whereby dust and debris arising from the blasting of the surface is substantially localized (col. 1, lines 6-37, col. 2, line 8).

It would have been obvious to one of ordinary skill in the art to have modified the method of EP '711 for making a multilayered ceramic substrate by removing the unsintered inorganic material by blasting with a combination of alumina particles, water and compressed air instead of dry sand blasting, as taught by Dudding to avoid the disadvantage of dispersion of debris and dust produced when dry sand blasting and to improve the efficiency in the amount of abrasive that needs to be utilized. The use of water and compressed air with the alumina particles would have been obvious to one of ordinary skill in the art as taught by Dudding to carry the abrasive and to distribute the water in the compressed air stream, whereby dust and debris arising from the blasting of the surface is substantially localized. Providing alumina as the abrasive with the water and compressed air for the blasting would have been obvious to one of ordinary skill in the art because EP '711 discloses sand blasting and JP '171 teaches that sand blasting involves spraying particles such as alumina. By using alumina to blast unsintered alumina inorganic material, the ceramic for blasting is the same ceramic as that of the unsinterable green sheets, as claimed.

(4)

Claims 4, 5, 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references as applied to claims 1 and 9 above, and further in view of Kim et al.

Kim et al. teach that alumina can be grit blasted using alumina as the abrasive and at a pressure of 50 psi (3.5 kg/cm<sup>2</sup>). Kim et al. further teach using fine grit of for example 12 to 20 microns in diameter (col. 4, lines 15-45, col. 6, lines 5-10).

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Blasting the unsintered alumina using the compressed air at an air pressure in the range of 3 to 5.5 kg/cm<sup>2</sup>, as claimed in Claims 4 and 10, would have been obvious to one of ordinary skill in the art, as Kim et al. teach that alumina can be grit blasted with alumina at a pressure of 50 psi (3.5 kg/cm<sup>2</sup>). The particular pressure used for blasting would have been obvious to one of ordinary skill in the art to achieve complete removal of the unsintered alumina from the ceramic substrate and could have been arrived at without undue experimentation.

Providing the alumina for dry blasting of a mean particle size of less than 10 microns, as claimed in Claims 5 and 11, would have been obvious to one of ordinary skill in the art as Kim et al. teach that finer grit of the order of 12 to 20 microns can be used for grit blasting.

(5)

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over the references as applied to claim 1 above, and further in view of Yam et al.

Yam et al. teach that the abrasive media such as glass beads, alumina or sand can be collected and reused for additional blast cleaning (col. 1, lines 23-34, col. 4, lines 1-4, col. 5, lines 20-22).

It would have been obvious to one of ordinary skill in the art to have modified the method of the references as combined by collecting the alumina after blasting, as taught by Yam et al. for reuse of the abrasive media for additional blast cleaning.

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*Conclusion*

(6)

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

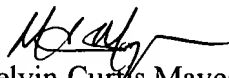
The references disclose apparatus for applying a combination of abrasive, water and air.

(7)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melvin Curtis Mayes whose telephone number is 703-308-1977. The examiner can normally be reached on Mon-Fri 7:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on 703-308-3853. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

  
Melvin Curtis Mayes  
Primary Examiner  
Art Unit 1734

MCM  
September 12, 2002